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EXAMINER

DINH, TUAN T

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/733,476

Applicant(s)

GONZALEZ ET AL.

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 5,9,10 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,6-8,11-15,20,21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) 2,3 and 16-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Applicant's election with traverse of Specie IV (figure 8, claims 1-25) in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the restriction fails to meet the two criteria:

(A) the invention must be independent or distinct as claimed

(B) there must be a serious burden on the examiner if restriction is required.

This is not found persuasive because Examiner did the restriction by specie(s), each specie(s) or embodiment(s) would show(s) a different structure of invention, each of specie(s) might read on a group of claims (including independent claim(s)), or some of claims (dependent claims) to view a specific invention. Thus, there are more than one species or embodiments; therefore, they must be a serious burden on the exam.

Further, Figure 8 does not read on claims 5, 9-10, and 22 (figure 8 does not disclose pressure/backing plates having a window, heatsink, or fractal shaped)

The requirement is still deemed proper and is therefore made FINAL. Claims 5, 9-10, and 22 are withdrawn from further consideration as being drawn to non-elected subject matter.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "202" has been used to designate both an apex and a summit. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Specification***

3. The disclosure is objected to because of the following informalities:

Please, change "a summit" to --an apex--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonefoy (U. S. Patent 4,511,869).

As to claim 1, Bonefoy discloses a retention mechanism (10, column 3, lines 52-53) for mounting an integrated circuit package to a circuit board (14, column 3, lines 55-56) as shown in figures 1-7, comprising:

a dish-shaped, elastically deformable pressure plate (22), having a first apex and a first periphery spaced away from the first apex, the pressure plate being deformable by applying a first force to the first periphery directed generally towards the first apex;

a dish-shaped, elastically deformable backing plate (23), having a second apex and a second periphery spaced away from the second apex, the backing plate being deformable by applying a second force to the second periphery directed generally towards the second apex; and

means for (24) simultaneously applying the first and second deforming forces to the first and second peripheries to engage the first apex with a surface of the integrated circuit package and the second apex with a surface of the circuit board so as to effect continuous electrical continuity between the integrated circuit package and the circuit board (see column 4, lines 8-61).

As to claim 4, Bonnefoy discloses the retention mechanism as shown in figures 1-7 further comprising an elastically deformable gasket (29, column 4, lines 62-63) positioned between the pressure plate and the integrated circuit package.

As to claim 11, Bonnefoy discloses the retention mechanism (10) as shown in figures 1-7 comprising:

a paraboloid, elastically deformable pressure plate (22), having a concave surface, a convex surface, an apex, and a periphery spaced away from the summit, the pressure plate being deformable by applying a first force to the periphery directed generally towards the summit;

an integrated circuit package (substrate 12 having band 30) having a top and a bottom surface, the convex surface of the pressure plate being contactable by the top surface;

a circuit board (14 having plate 20) having a top and a bottom surface, the bottom surface of the integrated circuit package being contactable by the top surface; and

a paraboloid, elastically deformable backing plate (23), having a concave surface, a convex surface, an apex, and a periphery spaced away from the summit, the

backing plate being deformable by applying a second force, opposing the first force, to the periphery of the backing plate directed generally towards the summit of the backing plate, the bottom surface of the circuit board being contactable by the convex surface of the backing plate; and

one or more fasteners (25, 27) to simultaneously apply the first and second deforming forces (24) to the peripheries of the plates to engage the top surface of the integrated circuit package with the convex surface of the pressure plate and the bottom surface of the circuit board with the convex surface of the backing plate and to deform the plates so as to effect continuous electrical continuity between the integrated circuit package and the circuit board.

As to claim 23, Bonnefoy discloses an electronic assembly as shown in figures 1-7 comprising:

a paraboloid, elastically deformable pressure plate (22), having a concave surface, a convex surface, an apex, and a periphery spaced away from the summit, the pressure plate deformed by first force applied to the periphery directed generally towards the summit;

an integrated circuit package (12) having a top and a bottom surface, the top surface in contact with the convex surface of the pressure plate;

a circuit board (14) having a top and a bottom surface, the top surface in contact with the bottom surface of the integrated circuit package; and

a paraboloid, elastically deformable backing plate (23), having a concave surface, a convex surface, an apex, and a periphery spaced away from the summit, the

backing plate deformed a second force, opposing the first force, applied to the periphery of the backing plate directed generally towards the summit of the backing plate, the convex surface of the backing plate in contact with the bottom surface of the circuit board; and

means for (24) simultaneously applying the first and second deforming forces to the periphery of the pressure plate and the periphery of the backing plate to engage the convex surface of the pressure plate with the top surface of the integrated circuit package and the convex surface of the backing plate with the bottom surface of the circuit board and to deform the plates so as to effect continuous electrical continuity between the integrated circuit package and the circuit board.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-7, 12-15, 21-22, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefoy ('869) in view of Frankeny et al. (U. S. Patent 5,770,891).

As to claims 6-7, Bonnefoy discloses all of the limitations of the claimed invention, except for a gasket having a height less than about 1mm. Frankeny shows a gasket (3) has a height less than about 1 millimeters (column 4, lines 6-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a height (or thickness) of a gasket < 1mm of Frankeny to employ the retention mechanism of Bonnefoy in order to provide flexible or resilient connection between an IC chip and a PCB.

As to claims 12, 15, 24-25, Bonnefoy does not disclose a connector without pinholes interposed between the integrated circuit package with pinless and the circuit board.

Frankeny shows an IC chip package comprising a connector without pinholes (3) interposed between the integrated circuit package with pinless (1) and the circuit board (10) disclosed in figures 1-8.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching of Frankeny to employ the retention mechanism of Bonnefoy in order to serve as an interposer of an electrical interface connection between an IC chip and a PCB.

As to claims 13-14, Frankeny shows the connector has a height less than about 1 millimeters (column 4, lines 6-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a height (or thickness) of a connector < 1mm of Frankeny to employ the retention mechanism of Bonnefoy in order to provide flexible or resilient electrical connection between an IC chip and a PCB.

As to claims 21-22, Frankeny shows an IC package including an organic LGA or flip-chip PGA disclosed in figures 5-7.



It would have been obvious to have a teaching of Frankeny to employ the mechanism of Bonnefoy for purpose of increase electrical connections between IC chip and a PCB, and also, easy to replace the chip mounted on the PCB if need.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefoy in view of Frankeny, and further in view of Dozier, II et al. (U. S. Patent 5,772,451).

Bonnefoy and Frankeny disclose all of the limitations of the claimed invention, except for the plates are made from a material selected from the group consisting of beryllium copper and steel. Dozier shows a spring element made of Beryllium copper material.

It would have been obvious to one having ordinary skill in the at the time the invention was made to have material of Beryllium copper of Dozier to employ the mechanism of Bonnefoy and Frankeny in order to provide a flexible, light weight, and thin mechanism.

#### ***Allowable Subject Matter***

9. Claims 2-3, 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matta et al., Autry et al., and Brosky disclose related art.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-1341 for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

**TD**  
March 8, 2003